

CLAIMS.

1. A method for preparing an heterogenised catalyst component comprising the
 5 steps of:

a) providing a halogenated precursor component of formula (I)



10 b) reacting the halogenated precursor with an ionic liquid precursor in a solvent to prepare an ionic liquid;



15 c) optionally, reacting the intermediate IL^+X^- with a salt C^+A^- , wherein C^+ is a cation that can be selected from K^+ , Na^+ , NH_4^+ , and A^- is an anion that can be selected from PF_6^- , SbF_6^- , BF_4^- , $(\text{CF}_3\text{—SO}_2)_2\text{N}^-$, ClO_4^- , CF_3SO_3^- , NO_3^- or CF_3CO_2^- .

d) using the ionic liquid prepared in step b) to heterogenise a metallocene component of formula (II)



20 wherein Cp and Cp' are independently selected from substituted or unsubstituted cyclopentadienyl groups M is a metal selected from Group 4 of the Periodic Table, R^n is a structural bridge imparting stereorigidity between Cp and Cp' and Q is a halogen or an alkyl having from 1 to 12
 25 carbon atoms and wherein the amounts of ionic liquid and catalyst components are in a molar ratio (ionic liquid)/(catalyst component) of from 5:1 to 1:5;

e) heterogenising the ionic liquid/metal system by addition of an apolar solvent inducing the precipitation reaction;

30 f) retrieving a metallocene catalyst component heterogenised by an ionic liquid.

2. The method of claim 1 wherein the ionic liquid precursor is N -alkyl-imidazolium or pyridinium.
- 5 3. The method of claim 1 or claim 2 wherein the ionic liquid and the catalyst component are in stoichiometric amounts.
4. The method of any one of claims 1 to 3 wherein the solvent used in steps b), step c) and step d) is selected from THF, CH₂Cl₂ or toluene.
- 10 5. The method of any one of the preceding claims wherein the metallocene catalyst component is selected from a bis -indenyl, a bis-benzindenyl or a bis-tetrahydroindenyl, substituted or unsubstituted.
- 15 6. A catalyst component heterogenised by an ionic liquid obtainable by the method of any one of claims 1 to 5.
7. A catalyst system heterogenised by in an ionic liquid comprising the catalyst component of claim 6 and an activating agent.
- 20 8. The catalyst system heterogenised by an ionic liquid of claim 7 wherein the activating agent is methylaluminoxane and wherein Q is a halo gen.
9. The catalyst system heterogenised by an ionic liquid of claim 8 wherein the amount of methylaluminoxane is such that the Al/M ratio is of from 100 to 1000.
- 25 10. A method for homopolymerising or copolymerising alpha -olefins that comprises the steps of:
- 30 a) injecting the catalytic system heterogenised by an ionic liquid of any one of claims 7 to 9 with an apolar solvent into the reactor;

- b) injecting the monomer and optional comonomer into the reactor;
- c) maintaining under polymerisation conditions;
- d) retrieving the polymer.

5 11. The method of claim 10 wherein the apolar solvent is n -heptane.

12. The method of claim 10 or claim 11 wherein the monomer is ethylene or propylene.